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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,379	01/18/2002	Hiroshi Takekawa	3531.66126	6956
24978	7590	01/30/2004		
GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606			EXAMINER WONG, KIN C	
			ART UNIT 2651	PAPER NUMBER

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,379

Applicant(s)

TAKEKAWA ET AL.

Examiner

K. Wong

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 14.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/17/03 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims (1-7) are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa et al (6034834) in view of Imamura et al (5764444).

Regarding claim 1: Yoshikawa et al discloses a head actuator device in a disk drive (see figure 8 of Yoshikawa et al and also the associated descriptions of the drive component for details) for a primary resonant frequency of 100 Hz or higher and the compensation thereof (see col. 2, lines 32-40 and col. 5, lines 24-54 of Yoshikawa et al).

Although Yoshikawa et al discloses a piezoelectric subactuator (or microactuator) to the arm for fine positioning (or correction or compensation) (see col. 10, lines 30-61

Art Unit: 2651

of Yoshikawa et al), Yoshikawa et al fails to positively mention the piezoelectric microactuator arm. Imamura et al is relied upon for the teachings of the piezoelectric microactuator arm (see figure 4A and col. 6, lines 21-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the arm assembly of Yoshikawa with the piezoelectric microactuator arm as taught by Imamura et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide a symmetrical movement in responsive to the resonant or deformity as suggested in col. 8, lines 6-24 of Imamura et al.

Regarding claim 2: Yoshikawa et al teaches that wherein the main actuator includes a ball bearing fixed to the base, the ball bearing having a property of a nonlinear spring, the primary resonant frequency being set according to the rigidity of the nonlinear spring (in col. 3, lines 45-59 of Yoshikawa et al).

Regarding claim 3: Yoshikawa et al teaches that wherein the rigidity of the nonlinear spring is increased by increasing a preload in the ball bearing (in col. 3, lines 49-57 of Yoshikawa et al).

Regarding claim 4: the limitations of wherein the rigidity of the nonlinear spring is increased by increasing a ball diameter in the ball bearing are considered known because Yoshikawa et al describes the similar noted functions in col. 4, lines 7-50.

Regarding claim 5: the limitations of wherein the rigidity of the nonlinear spring is increased by increasing the viscosity of a grease used in the ball bearing are

Art Unit: 2651

considered known because Yoshikawa et al describes the similar noted functions in col. 4, lines 52 to col. 5, line 28.

Regarding claim 6: the limitations of an elastic member provided between the main actuator and the base, the primary resonant frequency being-set according to the modulus of elasticity of the elastic member are considered known because Yoshikawa et al describes a similar noted functions in col. 11, lines 8-18.

Regarding claim 7: Yoshikawa et al teaches that wherein the primary resonant frequency is set to 150 Hz or higher (in col. 5, lines 29-46 of Yoshikawa et al).

Response to Arguments

Applicant's arguments filed 11/17/03 have been fully considered but they are not persuasive because the arguments are directed to the newly amended claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schirle (6621653) is cited for microactuator arm and resonant compensation. Wood et al (6038105) is cited for bearing resonant compensation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Wong whose telephone number is (703) 305-7772.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (703) 308-4825. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for all communications.

Art Unit: 2651

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

kw

22 Jan 04


DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600